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**REMARKS**

Claims 1-25 were pending in this application. Of these claims the Examiner had withdrawn claims 1 to 11 and 20 to 25 from consideration as drawn to a non-elected invention and rejected claims 12-19.

Applicants have hereinabove canceled claims 1 to 25 and added new claims 37 to 49. Applicants maintain that these claims are fully supported by the specification as originally filed and do not raise any issue of new matter.

More specifically, support for new claim 37 can be found, *inter alia*, in the specification at page 11, lines 8 to 10; page 12, lines 11 to 16; page 15, line 28 to page 16, line 5; page 16, lines 7 to 13; page 17, lines 2 to 5, 17 and 18 and lines 26 to 28; page 23, lines 23 to 25; page 24, lines 27 to 30; page 25; lines 23 to 25; page 26, lines 4 and 5; page 44, lines 14 to 17; page 49, lines 28 to 30; page 50, lines 27 to 30; page 51, lines 15 and 16; page 57, lines 7 to 10; page 63, lines 7 to 13; page 66, lines 18 to 21; and page 67, lines 28 to 31.

Support for new claim 38 can be found, *inter alia*, in the specification at page 51, lines 15 and 16.

Support for new claim 39 can be found, *inter alia*, in the specification at page 13, lines 20 to 22.

Support for new claim 40 can be found, *inter alia*, in the specification at age 57, lines 6 to 10.

Support for new claim 41 can be found, *inter alia*, in the

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specification at page 16, lines 7 to 13.

Support for new claim 42 can be found, *inter alia*, in the specification at page 11, lines 8 to 10; page 12, lines 11 to 16; page 15, line 28 to page 16, line 5; page 16, lines 7 to 13; page 17, lines 2 to 5, lines 17 and 18 and lines 26 to 28; page 44, lines 14 to 17; page 51, lines 27 and 28; page 57, lines 7 to 10; and page 60, lines 20 to 22.

Support for new claim 43 can be found, *inter alia*, in the specification at page 51, lines 15 and 16.

Support for new claim 44 can be found, *inter alia*, in the specification at page 13, lines 20 to 22.

Support for new claim 45 can be found, *inter alia*, in the specification at page 15, lines 23 to 26.

Support for new claim 46 can be found, *inter alia*, in the specification at page 57, lines 6 to 10.

Support for new claim 47 can be found, *inter alia*, in the specification at page 16, lines 7 to 13.

After entry of this Amendment, new claims 37 to 47 will be pending and under examination in the subject application.

**Priority**

On page 3 of the November 14, 2006 Office Action the Examiner acknowledged applicants' claim for priority under 35 U.S.C. §119 and confirmed receipt of the certified copy of the priority

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document.

#### **Information Disclosure Statement**

On page 4 of the Office Action the Examiner indicated that an initialed and dated copy of Applicants' IDS form 1449 filed on December 22, 2004 is attached. The Examiner further indicated that the reference to "PCT International Search Report" is crossed out because the bibliographic information for this citation is incomplete. In response applicants submit a Supplemental Information Disclosure Statement discussed further hereinafter.

#### **Objections to the specification**

The Examiner objected to the disclosure because it contains an embedded hyperlink and/or other form of browser-executable code. The Examiner indicated that, for example, page 42, line 27; page 43, lines 4, 7 and 10; and page 78, line 18. The Examiner indicated that applicants are required to delete the embedded hyperlink and/or other form of browser-executable code, referencing M.P.E.P. §608.01.

In response, applicants have amended the specification to remove embedded hyperlinks and/or other forms of browser-executable code. Applicants maintain that the amendments to the specification raise no issue of new matter. Accordingly, applicants respectfully request entry of the amendment to the specification.

The Examiner in paragraph 5 of the Office Action indicated that the extra spaces between "transpiration." and "Typical" must be

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deleted. In response, applicants have amended the specification to remove the extra spaces.

The Examiner in paragraph 6 on page 4 of the Office Action indicated that the description of the drawings do not have SEQ ID listed with the sequences. The Examiner indicated that, for example, the sequence in Figure 13 must be referred to by their sequence identifiers as required by 37 C.F.R. §1.821. The Examiner indicated that, likewise, the description to Figure 14 (page 31, lines 14-16) have amino acid sequences which are not identified by sequence identifiers as required by 37 C.F.R. §1.821. The Examiner indicated that any sequence that appears in the specification must be identified by its SEQ ID Number and further listed in sequence listing. The Examiner indicated that if the sequences appearing in the specification do not have sequence ID numbers assigned to them, then an amendment to the sequence listing will be required as well. The Examiner indicated that there must not be any new matter submitted, therefore it is important to be careful to include only the sequences that are already disclosed in the current specification. The Examiner indicated that failure to correct the deficiency will be held a non-responsive to this Office action. The Examiner indicated that appropriate corrections are required.

In response, applicants note that each of sheets 20 to 22 submitted to the United States Patent and Trademark Office on December 22, 2004 contain obvious typographical errors as established by the Brief Description of the Figures on page 31. Specifically, sheet 20 was labeled "Figure 12" instead of "Figure 13", sheet 21 was labeled "Figure 13" instead of "Figure 14" and sheet 22 was labeled "Figure 14" instead of "Figure 15".

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Applicants attach hereto as Exhibit B replacement sheets for sheets 20 to 22, *inter alia*. Applicants note that replacement sheet 20 is labeled "Figure 13", replacement sheet 21 is labeled "Figure 14", and replacement sheet 22 is labeled "Figure 15". Applicants maintain that the labels on replacement sheets 20 to 22 can be clearly ascertained from the description of the Figures at page 31, lines 4 to 22. Applicants further maintain that the description of Figure 14 identifies the amino acid sequences listed in replacement sheet 21 by sequence identifiers as required by 37 C.F.R. §1.821. Additionally, applicants have amended the specification herein to add SEQ ID NOs to the amino acid sequences listed on page 31, lines 14 to 16 in accordance with 37 C.F.R. §1.821. Applicants maintain that replacement sheets 20 to 22 and the amendment to the specification contain no new matter. Accordingly, applicants respectfully request entry of the replacement sheets and the amendment to the specification.

Additionally, applicants attach hereto as Exhibit A a paper copy substitute Sequence Listing. The substitute Sequence Listing differs from the Sequence Listing submitted to the United States Patent and Trademark Office on December 22, 2004 in that the sequences listed on page 31, lines 14 to 16 of the specification have been added to the substitute Sequence Listing in accordance with 37 C.F.R. §§1.821 to 1.825. Applicants also attach hereto a Statement Of Compliance Under 37 C.F.R. §1.821(f) as Exhibit C and, as Exhibit D, a computer readable form substitute Sequence Listing. Applicants maintain that the substitute Sequence Listing raises no issue of new matter. Accordingly, applicants respectfully request entry of the substitute Sequence Listing attached hereto as Exhibit A. Applicants maintain that the subject application as amended is in compliance with 37 C.F.R. §§1.821 to 1.825.

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### Objections to the drawings

The Examiner in paragraph 7 of the Office Action indicated that drawings are objected to because they allegedly fail to comply with 37 C.F.R. §1.83.

The Examiner indicated that in Figures 1a-1c, labels for genotypes on X-axis are allegedly invisible as they are buried within the graph bars.

The Examiner indicated that in Figures 1b-1c, labels such as "Stomatal conductance Run 11-Dec.2001" in Figure 1b and "Transpiration efficiency from gas exchange measurements Run 11-Dec.2001" in Figure 1c must be deleted.

The Examiner indicated that in Figures 3-5, X-axis and Y-axis must be identified by labels. The Examiner indicated that text numbers on Y-axis are too close. The Examiner indicated that, also in Figure 5, number "2" appearing at the bottom of figure must be deleted.

The Examiner indicated that in Figure 11, label "Run 22-June 03" is unnecessary and must be deleted along with the rectangular box that encloses the label.

The Examiner indicated that corrected drawing sheets in compliance with 37 C.F.R. §1.121(d) are required in reply to the Office action to avoid abandonment of the application. The Examiner indicated that any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being

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amended. The Examiner indicated that the figure or figure number of an amended drawing should not be labeled as "amended." The Examiner indicated that if a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. The Examiner indicated that additional replacement sheets may be necessary to show the renumbering of the remaining figures. The Examiner indicated that each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 C.F.R. §1.121(d). The Examiner indicated that if the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The Examiner indicated that the objection to the drawings will not be held in abeyance. The Examiner indicated that appropriate corrections are required.

In response to the objections to the drawings, applicants attach hereto as Exhibit B thirteen (13) replacement sheets. Applicants maintain that the replacement sheets and comply with the applicable rules and address the issues raised by the Examiner. Applicants further maintain that the replacement sheets do not contain no new matter. Accordingly, applicants respectfully request entry of the replacement sheets.

#### Claim objections

In paragraph 8 of the Office Action the Examiner indicated that claim 13 is directed to a non-elected invention. The Examiner indicated that in claims 15 to 16, line 4, "to" after

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"introduced" and before "the" must be replaced with "into". The Examiner indicated that in claim 19, line 3, "an" after "of" and before "ERECTA" must be replaced with "the". The Examiner indicated that appropriate corrections are required.

In response, in order to expedite prosecution, and without conceding the correctness of the Examiner's position, applicants have canceled claims 13, 15, 16 and 17 without disclaimer or prejudice to applicants' right to pursue the subject matter of these claims in a future application. Accordingly, applicants respectfully request that the Examiner withdraw this ground of objection.

**Claim rejections under 35 U.S.C. §112, second paragraph**

The Examiner in paragraph 9 of the Office Action rejected claims 12 to 19 under 35 U.S.C. §112, second paragraph, as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

More specifically, the Examiner asserted that claim 12 is incomplete for omitting essential steps, such omission amounting to a gap between the steps e.g. the essential step of expressing the ERECTA gene or an allelic variant thereof is missing. The Examiner asserted that the last step only results in a plant comprising the ERECTA gene or an allelic variant thereof. The Examiner alleged that claims 13-16, 18 and 19 also do not recite expression step.

In response, in order to expedite prosecution, and without conceding the correctness of the Examiner's position, applicants



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have canceled claims 12, 13 to 16, 18 and 19 herein without disclaimer or prejudice. Accordingly, applicants respectfully request that the rejection of claims 12, 13 to 16, 18 and 19 be withdrawn. Insofar as the reasons for the rejection of claims 12, 13 to 16, 18 and 19 might be applied to new claims 37-49, applicants note that claims 37 and 42 recite that the ERECTA gene is introduced under conditions such that it is expressed and a further step of selecting for plants having enhanced transpirational efficiency as a result of such expression is recited.

The Examiner rejected claims 12-13 and 15-17 under 35 U.S.C. §112, second paragraph, as being allegedly indefinite in their recitation "gene" which is asserted to be confusing since the limitation "gene" implies that the structure comprises the coding sequence and the associated promoter, terminator and enhancer encoding regions are also a part of the structure (see The Federal Register, Vol. 66, No. 4, Friday, January 5, 2001 at page 1108, left column, Endnote 13). The Examiner asserted that in the instant case, Applicants do not appear to describe such ERECTA gene associated nucleic acid sequences. The Examiner suggested that "gene" be amended to "coding sequence". The Examiner indicated that all subsequent recitations of "gene" are also rejected.

In response, in order to expedite prosecution, and without conceding the correctness of the Examiner's position, applicants have canceled claims 12 and 13 and 15 to 17 herein without disclaimer or prejudice. Accordingly, applicants respectfully request that the rejection of claims 12 and 13 and 15 to 17 be withdrawn. Insofar as the reasons for the rejection of claims 12 and 13 and 15 to 17 might be applied to new claims 37-49,

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applicants note that claims 37 and 42 recite a nucleic acid which encodes the ERECTA protein.

The Examiner rejected claim 12 under 35 U.S.C. §112, second paragraph, as being allegedly indefinite in its recitation "different transpiration efficiency" which is confusing since it is unclear whether "transpiration efficiency" is increased or decreased. The Examiner indicated "in which way the "transpiration efficiency" is different?". The Examiner alleged that is unclear what is intended.

In response, in order to expedite prosecution, and without conceding the correctness of the Examiner's position, applicants have canceled claim 12 herein without disclaimer or prejudice. Accordingly, applicants respectfully request that the rejection of claim 12 be withdrawn. Applicants note that none of new claims 37-49 recite "different transpiration efficiency", instead these claims recite enhanced transpirational efficiency.

The Examiner rejected claim 12 under 35 U.S.C. §112, second paragraph, as being allegedly indefinite in its recitation "near-isogenic", which is asserted to be confusing since it is unclear what is encompassed and what is not encompassed by the recitation. The Examiner alleged that the metes and bounds of the recitation are unclear as it is not defined. In response, in order to expedite prosecution, and without conceding the correctness of the Examiner's position, applicants have canceled claim 12 herein without disclaimer or prejudice. Accordingly, applicants respectfully request that the rejection of claim 12 be withdrawn. Applicants note that none of new claims 37-49 recite "near-isogenic".

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The Examiner rejected claims 12-13 and 15-17 under 35 U.S.C. §112, second paragraph, as being allegedly indefinite in its recitation "allelic variant", which is asserted to be confusing since it is unclear how an allele is different from "allelic variant". The Examiner indicated "What kind of variation is being referred to?". The Examiner asserted that it is unclear what is encompassed by "allelic variant" and what is not. The Examiner alleged that it is unclear what is intended?

In response, in order to expedite prosecution, and without conceding the correctness of the Examiner's position, applicants have canceled claim 12 herein without disclaimer or prejudice. Accordingly, applicants respectfully request that the rejection of claim 12 be withdrawn. Applicants note that none of new claims 37-49 recite "allelic variant".

In view of the preceding remarks, applicants respectfully request that the Examiner reconsider and withdraw all rejections under 35 U.S.C. §112, second paragraph.

**Claim rejections under 35 U.S.C. §112, first paragraph**

In paragraph 10 of the Office Action the Examiner rejected claims 12-19 under 35 U.S.C. §112, first paragraph, because the specification, while being enabling for a method of increasing the transpiration efficiency of a plant comprising introducing and expression of a nucleotide sequence encoding the ERECTA protein of SEQ ID NO: 2 in said plant, allegedly does not reasonably provide enablement for a) nucleotide sequence which is not identical in sequence to SEQ ID NO: 1, b) a nucleotide sequence encoding a protein which is not identical in sequence to SEQ ID NO: 2, c) any ERECTA gene or an allelic variant thereof.

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The Examiner alleged that the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims. The Examiner's detailed reasons are set forth on pages 8-13 of the Office Action.

In response, in order to expedite prosecution, and without conceding the correctness of the Examiner's position, applicants have canceled claims 12 to 19 herein without disclaimer or prejudice. Accordingly, applicants respectfully request that the rejection of claims 12 to 19 be withdrawn.

Insofar as the reasons for the rejection of claims 12 to 19 might be applied to new claims 37-49, applicants maintain that the enablement of a nucleic acid encoding an ERECTA protein having an amino acid sequence of SEQ ID NO: 2 acknowledged by the Examiner also extends to the other specific nucleic acids disclosed in the specification. Thus, applicants maintain that the specification enables each of the nucleic acids encoding an ERECTA protein having an amino acid sequence from among any of SEQ ID NO: 4, SEQ ID NO: 6, SEQ ID NO: 8, SEQ ID NO: 10, SEQ ID NO: 12, SEQ ID NO: 20 and SEQ ID NO: 45. Applicants further maintain that the step of selecting for plants having enhanced transpirational efficiency recited in claims 37 and 42 enables any person skilled in the art to determine which plants having enhanced transpiration efficiency. Applicants also note that the pending claims recite a nucleic acid encoding an ERECTA protein having an amino acid sequence selected from the group consisting of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, SEQ ID NO: 8, SEQ ID NO: 10, SEQ ID NO: 12, SEQ ID NO: 20 and SEQ ID NO: 45, and do not recite any ERECTA gene or allelic variant.

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In view of the preceding comments and new claims 37-49 applicants request that the Examiner reconsider and withdraw the rejection based on alleged lack of enablement.

The Examiner in paragraph 11 on page 13 of the Office Action rejected claims 12-19 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. The Examiner alleged that the claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The Examiner's detailed reasons are set forth on page 13-15 of the Office Action.

In response, in order to expedite prosecution, and without conceding the correctness of the Examiner's position, applicants have canceled claims 12 to 19 herein without disclaimer or prejudice. Accordingly, applicants respectfully request that the rejection of claims 12 to 19 be withdrawn.

Insofar as the reasons for the rejection of claims 12 to 19 might be applied to new claims 37-49, applicants maintain that the pending claims recite a nucleic acid encoding an ERECTA protein having an amino acid sequence selected from the group consisting of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, SEQ ID NO: 8, SEQ ID NO: 10, SEQ ID NO: 12, SEQ ID NO: 20 and SEQ ID NO: 45, i.e. nucleic acids which are fully disclosed in the specification.

Accordingly, applicants request that the Examiner reconsider and withdraw the rejection for lack of written description.

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**Claim rejections under 35 U.S.C. §§102(b) and 103(a)**

Beginning at the bottom of page 15 the Examiner rejected claims 12-19 under 35 U.S.C. §102(b) as allegedly anticipated by or, in the alternative, under 35 U.S.C. §103(a) as allegedly obvious over Mitsukawa et al. (Japanese Patent Publication No. JP 09056382 A, published March 4, 1997) and evidenced by Masle et al. (Nature, 436:866-870, 2005).

The Examiner asserted that Mitsukawa et al. disclose a transgenic plant and a method of producing said transgenic plant comprising introducing and expressing a nucleotide sequence encoding the protein of accession No. AAW13408, which has 100% sequence identity to instant SEQ ID NO: 2, or wherein said transgenic plant is Arabidopsis. The Examiner indicated see claims 1-6; paragraphs 0001-0055. The Examiner alleged that the property of increasing the transpiration efficiency of a plant is inherent to the method of making said transgenic plant disclosed in the reference. The Examiner alleged that the inherent property of increased transpiration efficiency is further exemplified by Masle et al. who disclose ERECTA gene encoding a protein having 100% sequence identity to instant SEQ ID NO: 2, and wherein expression of said gene in a transgenic plant results in increased transpiration efficiency (see page 436, abstract, figure 1; page 867, figure 2; page 436, figures 3-4). The Examiner indicated see M.P.E.P. §2111.02. The Examiner indicated also see *In re Cruciferous Sprout Litig.*, 301 F.3d 1343,1346-48, 64 USPQ2d 1202, 1204-05 (Fed. Cir. 2002) where a claim at issue was allegedly directed to a method of preparing a food rich in glucosinolates wherein cruciferous sprouts are harvested prior to the 2-leaf stage. The Examiner alleged that the court held that the preamble phrase "rich in glucosinolates" helps define the

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claimed invention, as evidenced by the specification and prosecution history, and thus is a limitation of the claim (although the claim was anticipated by prior art that produced sprouts inherently "rich in glucosinolates"). Furthermore, see *Integra LifeSciences I Ltd. V. Merck KGaA* 50 USPQ2d 1846, 1850 (DC Scalif 1999), which allegedly teaches that where the prior art teaches all of the required steps to practice the claimed method and no additional manipulation is required to produce the claimed result, then prior art anticipates the claimed invention.

The Examiner alleged that instantly claimed invention encompasses a method step comprising selecting for a transgenic plant with increased transpirational efficiency phenotype compared to an untransformed plant. The Examiner alleged that neither the specification nor the prior art suggests that transgenic plant population expressing a polynucleotide encoding instant SEQ ID NO: 2 results in a significant proportion of transgenic plants which do not exhibit an increased transpiration efficiency phenotype. The Examiner alleged it would have been obvious to one of ordinary skill in the art to select for transgenic plant with increased transpiration efficiency (inherently associated property of polynucleotide sequence taught in the reference) because selection of a transgenic plant with a phenotype would have been the ultimate useful goal without any surprising or unexpected results.

In response, in order to expedite prosecution, and without conceding the correctness of the Examiner's position, applicants have canceled claims 12 to 19 herein without disclaimer or prejudice. Accordingly, applicants respectfully request that the rejection of claims 12 to 19 be withdrawn.

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Insofar as the reasons for the rejection of claims 12 to 19 under 35 U.S.C. §102(b) might be applied to new claims 37-49, applicants maintain that claim 37 recites introducing a nucleic acid into a culture of plant cells and the selection of plants generated from the plant cells having an enhanced transpiration efficiency. Applicants maintain that introducing a nucleic acid encoding an ERECTA protein into a culture of plant cells does not result in the expression of the ERECTA protein in all plant cells of the culture. Applicants further maintain that there will inevitably be plant cells of the culture that do not express the nucleic acid and consequently some of the plants will not express the nucleic acid. Applicants further note that claim 37 recites selecting for plants having enhanced transpiration efficiency compared to plants generated from the plant cells present in the same culture into which the nucleic acid was not introduced.

Applicants also note that claim 42 recites introducing a nucleic acid into a plant and the selection of plants having an enhanced transpirational efficiency. Applicants maintain that introducing a nucleic acid encoding an ERECTA protein into a plant does not result in the expression of the ERECTA protein in all plants. Applicants further maintain that there will inevitably be plants that do not express the nucleic acid. Applicants further note that claim 42 recites selecting for plants having enhanced transpiration efficiency compared to plants into which the nucleic acid was not introduced.

Applicants maintain that Mitsukawa et al. do not explicitly teach the selection of plants having enhanced transpiration efficiency based upon expression of an ERECTA protein noting in this regard that it is they who have discovered that the ERECTA protein is associated with transpiration efficiency. Applicants further



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note that Mitsukawa do not inherently teach their claimed method because, as indicated above it is not inevitable that every plant in Mitsukawa et al. expressed the ERECTA protein, or exhibited increased transpirational efficiency let alone that they can be selected based thereon. Accordingly, applicants maintain that their invention as recited in new claims 37-49 is not anticipated by Mitsukawa et al. and respectfully request that the Examiner reconsider and withdraw this ground of rejection.

Insofar as the reasons for the rejection of claims 12 to 19 under 35 U.S.C. §103(a) might be applied to new claims 37-49, applicants maintain that the connection between the ERECTA protein and transpirational efficiency was not known until applicants' invention. Applicants maintain that it would not have been obvious to one of ordinary skill in the art to produce, and/or to select for, plants expressing the ERECTA protein based on increased transpirational efficiency. Accordingly, applicants maintain that their claimed invention is not obvious over Mitsukawa et al. and respectfully request that the Examiner reconsider and withdraw this ground of rejection.